

WHAT IS CLAIMED:

add
Q17

1. A method of inhibiting generation, maturation, motility or viability of sperm by applying an effective amount of a cell permeable physiologically acceptable water soluble mineral salt of a carboxylic acid having a pH in the range of 6.0 to 7.5 capable of forming a stable solution under ambient conditions at pH 7.0 to sperm or developing sperm in a male or female reproductive track.
2. The method of claim 1 wherein the mineral salt is applied at a concentration from about 0.05M to about 2.0M.
3. The method of claim 1 wherein the mineral salt is applied at a concentration from about 0.05M to about 0.3M.
4. The method of claim 1 wherein the mineral salt is applied at a concentration from about 0.1M to about 0.2M.
5. The method of claim 2 wherein the mineral salt is zinc acetate or calcium acetate.
6. The method of claim 2 wherein the mineral salt is a carboxylic acid derivative of a pentose or hexose.
7. The method of claim 6 wherein the mineral salt is zinc gluconate or zinc gulonate.
8. The method of claim 7 wherein the mineral salt is zinc gluconate and wherein an amino acid is applied with the mineral salts as a permeation enhancer.

16

9. The method of claim 8 wherein the amino acid is selected from the group consisting of alanine, valine, isoleucine, proline, glycine, serine, threonine, asparagine, glutamine, lysine, arginine, histidine and mixtures thereof.

10. A method of inhibiting the generation or maturation of sperm in a testis or epididymis by injecting an effective amount of a zinc salt of a carboxylic acid derivative of a pentose or hexose with an amino acid as a permeation
5 enhancer, said zinc salt having a pH in the range of 6.0 to 7.5 and capable of forming a stable solution under ambient conditions at pH 7.0.

11. The method of claim 10 wherein the molar ratio of mineral salt to amino acid is from about 0.05M:2.0M to about 2.0M:0.05M.

12. The method of claim 10 wherein the ratio is from about 0.05M:0.3M to about 0.3M:0.05M.

13. The method of claim 10 wherein the ratio is from about 0.1M:0.2M to about 0.2M:0.1M.

14. The method of claim 11 wherein the mineral salt is zinc gluconate and the amino acid is arginine.

15. A method of inhibiting the motility or viability
5 of sperm in a vagina, cervix, uterus or fallopian tube by applying an effective amount of a zinc salt selected from the group consisting of zinc acetate and calcium acetate, said zinc salt having a pH in the range of 6.0 to 7.5 and capable of forming a stable solution under ambient conditions at pH 7.0.

16. The method of claim 15 wherein the zinc salt is applied at a concentration from about 0.05M to about 2.0M.

17. The method of claim 15 wherein the zinc salt is applied at a concentration from about 0.05M to about 0.3M.

18. The method of claim 15 wherein the zinc salt is applied at a concentration from about 0.1M to about 0.2M.

19. A solution for inhibiting the generation, maturation, motility or viability of sperm comprising an aqueous solution of a cell permeable physiologically acceptable water soluble mineral salt of a carboxylic acid having a pH in the
5 range of 6.0 to 7.5 capable of forming a stable solution under ambient conditions at pH 7.0, said mineral salt present in an effective amount to inhibit the generation, maturation, motility or viability of sperm when applied to sperm or developing sperm in a male or female reproductive track.

20. The solution of claim 19 wherein the mineral salt is present at a concentration from about 0.05M to about 2.0M.

21. The solution of claim 19 wherein the mineral salt is at a concentration from about 0.05M to about 0.3M.

22. The solution of claim 19 wherein the mineral salt is at a concentration from about 0.1M to about 0.2M.

23. A solution for inhibiting the generation or maturation of sperm without effecting the generation of testosterone comprising an aqueous solution of a cell permeable physiologically acceptable mineral salt of a carboxylic zinc
5 derivative of a pentose or hexose having a pH in the range 6.0 to 7.5 capable of forming a stable solution under ambient conditions at pH 7.0, said mineral salt present in an effective amount to inhibit the generation or maturation of sperm when injected into the testes or epididymis of a male animal.

24. The solution of claim 23 wherein the mineral salt is zinc gluconate.

25. The solution of claim 24 wherein the solution further includes an amino acid selected from the group consisting of alanine, valine, isoleucine, proline, glycine, serine, threonine, asparagine, glutamine, lysine, arginine, histidine and
5 mixtures thereof and is neutralized to substantially pH 7.0.

26. The solution of claim 25 wherein the amino acid is arginine.

27. The solution of claim 26 wherein the molar ratio of zinc gluconate to arginine is from about 0.05M:2.0M to about 2.0M:0.05M.

28. The solution of claim 26 wherein the molar ratio of zinc gluconate to arginine is from about 0.05M:0.3M to about 0.3M:0.05M.

29. The solution of claim 26 wherein the molar ratio of zinc gluconate to arginine is from about 0.1M:0.2M to about 0.2M:0.1M.